

REMARKS

Claims 1-14 are pending. Claim 8 has been amended. Reconsideration and allowance of the present application based on the following remarks are respectfully requested.

Entry of this amendment is respectfully requested since no new issues are raised by the entry of this amendment and it placed the application in condition for allowance or at least in better form for appeal.

Claim Rejections Under 35 U.S.C. § 102

Claims 1, 2, and 5 were rejected under 35 U.S.C. § 102(b) over Lee et al. (U.S. Patent No. 5,822,360). Applicants respectfully traverse this rejection.

Claim 1 recites, in part, an apparatus for embedding a watermark into an original audio signal that includes a linear prediction analysis means for generating a prediction coefficient of the original audio signal by means of a linear prediction analysis after the original audio has been inputted thereto and a residual signal output means for outputting a residual signal of a delayed original audio signal by filtering the delayed original audio signal using the prediction coefficient generated from the linear prediction analysis means. The Office Action, on pages 2-4, alleges that these features are disclosed by Lee. Applicants respectfully disagree.

On page 2 of the Office Action, the Examiner, in Response to Applicants previous argument, alleges that, in Lee a signal PN is delayed prior to filtering. In support for this, the Examiner has indicated that the signal PN corresponds to Applicants original signal and that the multiplier 90 delays the PN (original) signal such that a delayed PN signal is input to filter 94 (See, for Example, Figure 5). This assertion is incorrect. Specifically, the multiplier 90 in Lee does more than simply delay the PN signal, the multiplier 90 actually multiplies the PN signal with the $z(l)$ signal to obtain the modulated PN signal, $p(n)$. The $p(n)$ signal is not a delayed PN signal since it has been modulated with the $z(l)$ signal.

Furthermore, if, as asserted in the Examiner's argument, the PN signal is the original signal, Lee fails to disclose that a linear prediction analysis means generates a prediction coefficient of the original audio signal by means of a linear prediction analysis after the original audio has been inputted thereto. Specifically, Lee discloses LPC analysis module 88 that generates the array $\{a\}$. The LPC analysis module 88 receives the digital audio signal $s(n)$ as an input (See, for example, Figure 5). Lee does not disclose that the PN

signal (i.e., the signal that is alleged to be the original signal) is inputted into the LPC analysis module to generate prediction coefficients.

In fact, the method disclosed by the Lee reference is completely different than the method recited in claim 1. Accordingly, Lee fails to teach, or even suggest, an apparatus for embedding a watermark into an original audio signal that includes a linear prediction analysis means for generating a prediction coefficient of the original audio signal by means of a linear prediction analysis after the original audio has been inputted thereto and a residual signal output means for outputting a residual signal of a delayed original audio signal by filtering the delayed original audio signal using the prediction coefficient generated from the linear prediction analysis means, as recited in claim 1.

Claims 2 and 5 are believed allowable for at least the same reasons presented above with respect to claim 1 by virtue of their dependence upon claim 1. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

Claim Rejections Under 35 U.S.C. § 103

A. Claims 3, 4, and 6-8 were rejected under 35 U.S.C. § 103(a) over Lee in view of Hannigan et al. (U.S. Patent No. 6,674,876). Applicants respectfully traverse this rejection.

Claim 8 is believed allowable for at least the same reasons presented above with respect to claim 1 at least because claim 8 recites features that are similar to the features of claim 1 discussed above and because Hannigan does not remedy at least those deficiencies of Lee.

Claims 3, 4, 6, and 7 are believed allowable for at least the reasons presented above with respect to claim 1 by virtue of their dependence upon claim 1 and because Hannigan does not remedy at least the deficiencies of Lee discussed above.

Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.

B. Claims 9-14 were rejected under 35 U.S.C. § 103(a) over Hannigan in view of Hayashi et al. (U.S. Patent No. 6,434,253). Applicants respectfully traverse this rejection.

Claims 9 and 14 each relate to a method or apparatus for detecting a watermark that includes a linear prediction analysis means for generating a prediction coefficient by means of linear prediction analysis of the watermarked audio signal.

Although the Examiner alleges that Hannigan teach the linear prediction analysis means recited in claim 1. Applicants respectfully submit that there is no such teaching in

Hannigan. Specifically, Hannigan merely discloses predictive filtering (See, for example, Columns 12 and 13. Hannigan is silent regarding the linear prediction analysis means for generating a prediction coefficient recited in claims 9 and 14. Hayashi does not remedy at least this deficiency of Hannigan. Accordingly, no combination of Hannigan and Hayashi teach or suggest a method or apparatus for detecting a watermark that includes a linear prediction analysis means for generating a prediction coefficient by means of linear prediction analysis of the watermarked audio signal, as recited in claims 9 and 14.

Claims 10-13 are believed allowable for at least the same reasons presented above with respect to claim 9 by virtue of their dependence upon claim 9. Accordingly, Applicants respectfully request reconsideration and withdrawal of this rejection.


Conclusion

Therefore, all objections and rejections having been addressed, it is respectfully submitted that the present application is in a condition for allowance and a Notice to that effect is earnestly solicited.

Should any issues remain unresolved, the Examiner is encouraged to contact the undersigned attorney for Applicants at the telephone number indicated below in order to expeditiously resolve any remaining issues.

Respectfully submitted,

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